Project - 16

Status of Tiger and its Prey Species in Panna Tiger Reserve, Madhya Pradesh

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June 2009

Citation: Wildlife Institute of India, 2009. Status of tiger and its prey species in Panna Tiger Reserve, Madhya Pradesh. Final Report submitted to Madhya Pradesh Forest Department, Bhopal. Wildlife Institute of India, Dehra Dun. pp 36.

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Abstract

Status of tiger population and its prey species was assessed in Panna Tiger Reserve (PTR), Madhya Pradesh during November 2008 - March 2009. The sampling design and data collection protocols were broadly adopted from the Phase – I (Occupancy Survey) and Phase – II (Abundance Estimation) strategies employed by the All India Tiger Population Estimation and Monitoring Project. Following a reconnaissance survey, 128 survey routes covering 369km and 119 line transects covering 186 km were sampled across the Reserve for establishing occupancy of tiger and prey abundance estimation respectively. Tiger sign was recorded in 15 out of 54 beats, which translated into naive occupancy of 0.3 (i.e. 30%). Bias corrected occupancy estimate was 0.8, but had high standard error (0.4) and low detection probability (0.2), reflecting that although the occupancy was widespread, it was rare and inconsistent. Only one male tiger was photographed in the intensive camera trap efforts of 1400 traps days over 40 sampling locations spread across the core area. Even this male was not found subsequently, and the last confirmed evidence of tiger occurrence in PTR was on 31st January 2009, although reliable information of tiger presence outside the Reserve was recorded in the following months. Prey species were found to be distributed in reasonable densities, and the overall prey density was 48 animal/km^2, represented by Nilgai (17.60/km^2), Chital (13.9/km^2), Sambar (12/km^2), Chinkara (6.2/km^2) and Wild Pig (1.6/km^2). Disturbance was not a major issue in the core habitats, but the peripheral areas suffer from wood cutting and cattle grazing. Given the availability of appropriate ecological condition i.e. high prey density and low disturbance level, tiger loss in PTR relates to overpowering pressure on its population and physical removal of individuals, either in the Reserve itself or when strayed into the adjoining territorial forest where the condition is hostile. It is, therefore, important to place tiger conservation in PTR in the landscape context, addressing the problem along periphery and in the adjoining territorial forests.

Concept Proposal

Rapid Assessment of Status of Tiger and Prey Species in Panna Tiger Reserve, Madhya Pradesh

Background

Panna Tiger Reserve in Madya Pradesh is among the important Protected Area in the Central Indian Highlands complex, specifically for supporting good population of Tiger, Sloth Bear and various other faunal and floral species. However, this Reserve has undergone various crisis related to tiger conservation and there have been declines in the tiger population over the years. In order to restock the population, there is a proposal pending with the National Tiger Conservation Authority (NTCA) for translocation of tigers into this reserve. In response, taking cognizance of the prevailing situation in the field, the National Tiger Conservation Authority (NTCA) communicated to the State Authorities that the current population of tiger in Panna Tiger Reserve is precariously low, and that the technical expertise of Wildlife Institute of India (WII) would be sought to help asses the current status of tiger based on Camera Trap methods. In this direction, WII has expressed its willingness to undertake the task of assessing the current status of Tiger in Panna Tiger Reserve. This particular assignment would look into estimating occupancy and abundance of tiger and also its prey species within a span of three months. It is proposed that a team of Scientists and Project Fellows from WII would execute the task in collaboration with Field Authorities.

Sampling Design and Methods

The sampling design and methods would follow the Phase – I (Occupancy Estimation) and Phase – II (Abundance Estimation) strategies employed by the recent Tiger Population Estimation and Monitoring Project. Consistency of design and field protocols would allow appropriate comparison over time, while improving the sampling efficiency. In the first step, sign surveys would be carried out in all Forest Beats to establish presence/absence of tiger, and an estimate of occupancy would be derived based on the multiple search framework. Subsequently, Camera Traps would be deployed in systematically chosen strategic locations to assess the abundance status of tiger. Based on the preliminary data, required number of Camera Traps would be set up in the tiger occupied habitats. Placing of these cameras would be guided by the 2km grid approach and GPS locations followed by the previous project. Simultaneously, transect walks would be made in each of the Forest Beat to estimate the status of prey and habitat condition, including key disturbance details. Occupancy information would be analyzed using PRESENCE software to estimate occupancy probabilities along with associated error, while Camera Trap data would be analyzed based on typical Capture-

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Recapture models using MARK software. DISTANCE programme would be used to analyze the transect data. As mentioned above, the entire project is proposed to be completed in four months period, with three months for field sampling and one month for data analysis and report writing.

Expected Outcome

The study would result in habitat occupancy maps of tiger and associated prey species. An estimate of tiger abundance would be provided, along with a comparative estimate from the data obtained few years ago during the previous project on the same line. The information on the population status and anthropogenic details that would be gathered during the project would provide option for deciding upon further management interventions including the initiatives to bring Tigers to this Reserve from elsewhere.

Budget Requirement

S. No.	Details	Amount (in Rs)
1	Project Fellow: 4 @14,000/pm for 4 months	2,24,000
2.	Field Assistant: 5 @ 3,000/pm for 3 months	45,000
3.	Vehicle Hiring: 2 @ 1,500/day for 3 months	2,70,000
4.	Travel for Project Personnel	75,000
5.	Film Roll and Processing Charge	1,25,000
6.	Miscellaneous/unforeseen	11,000
	Total	**7,50,000**